# Architectural Metal and Glass Procurement

Material and finish selection, safety-glazing evidence, guard and handrail interfaces, fabrication dimensions, component quantities and physical receipts for project buyers.



Glass balcony railing and dark-framed opening in GEORGE’s Lebanon villa record. The photograph belongs to installation and fit-out feedback; it is not a final inspection or structural test.

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## The governing decision

Buy the defined assembly: the selected metal and glass, their connections, the actual supporting structure and the required evidence. A material name or attractive photograph cannot establish all of those decisions.

# Separate appearance, human impact and assembly performance

| Decision | What must be resolved |
| --- | --- |
| Function | Decorative screen, partition, operable enclosure, handrail and protective guard have different duties. |
| Metal and finish | Actual grade/alloy, fabrication, preparation, finish and exposure conditions. |
| Glass construction | Heat treatment, plies/interlayer, edges, holes, coatings and the evidence required for this application. |
| Connections | Hardware compatibility, anchors, actual substrate and interfaces with finishes or water management. |
| Dimensions and quantities | Measured opening, fabrication dimensions, installed gaps, physical panels and cut members. |
| Release and receipt | Current drawings, actual review records and separate physical acceptance. |

This volume focuses on architectural metal parts, glass infill, railings/handrails and related partition or shower-enclosure interfaces. It is a sourced procurement guide with assumed teaching calculations. It does not provide a universal glass thickness, post spacing, anchor pattern, load capacity or building-code approval.

NOVARMIA is a new GEORGE Group brand. The public group records below retain their original company and project attribution. Named external products and regional rules illustrate decisions; their certification and engineering do not transfer to every group product.

# Contents


| Section | Buyer decision |
| --- | --- |
| 01 | Translate real group sourcing routes into a defined assembly |
| 02 | Choose the metal, finish and exposure strategy |
| 03 | Match glass construction and evidence to the actual duty |
| 04 | Close panel, hardware, anchor and finished-opening interfaces |
| 05 | Calculate bounded quantities and compare complete scope |
| 06 | Use the editable schedule, quantity and receipt records |
| Reference | Working terms, source scope and image credits |


## One revision must reach every connected part

Changing glass build-up can change a gasket or shoe; changing a metal finish can change preparation and care; changing a substrate can change the connection design. Preserve the assembly identity and revise its affected documents together.

# Actual GEORGE railing and fitting records

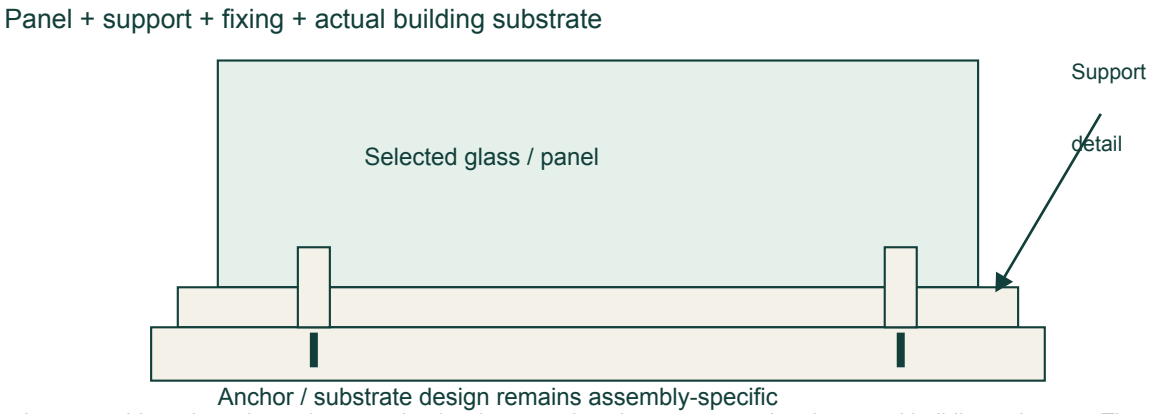
| Official record | Actual readable scope | Project information still needed |
|---|---|---|
| George Stair & Flooring railing [G01] | Metal, aluminum-alloy, cable, glass and acrylic railing routes; posts, balusters and rails. | Exact assembly, material/finish, glass construction, dimensions and project evidence. |
| George Stair & Flooring fittings [G02] | Glass pool-fence spigots; brackets, elbows, connectors and handrail-related accessories. | Actual model, material, glass/profile compatibility, connection detail and intended use. |
| GEORGE Lebanon villa [G03] | Attributed installation/fit-out photograph showing a balcony glass railing and adjacent framed opening. | No glass build-up, anchor, load test or final inspection can be determined from the image. |

These records establish real sourcing routes and an attributed project image. Their broad safety, corrosion, installation and code claims are not adopted as product specifications. In particular, fragmented tempered glass is not harmless, and a visible railing is not proof of a compliant guard.

### Define the scope before naming the style

A frameless appearance may still use a shoe, clamps, concealed fasteners and a designed support. A matching metal color does not identify an alloy, coating system or load path.

# A partition, handrail and guard are different purchases




Illustrative assembly: selected panel, supporting hardware and anchors connected to the actual building substrate. The drawing specifies no panel thickness, span, capacity or fixing design.

| Application | Primary decision |
|---|---|
| Decorative screen / partition | Visibility/privacy, panel and frame support, human-impact exposure, movement and adjacent services. |
| Shower door / enclosure | Impact safety, exact opening and handed operation, hardware/support, seals and the selected water-management detail. |
| Handrail | Graspable support, continuity, returns and the applicable access requirements. |
| Protective guard | Fall-protection assembly, openings, project loads, panel/support behavior, connections and supporting structure. |
| Fence / gate / pool barrier | The specific barrier/access duty, operation, openings and locally applicable requirements. |

A project may combine duties, but each must be addressed. A glass partition becomes a different design question when it protects a drop. A top cap on a guard is not automatically a compliant gripping handrail.

# Specify grade or alloy before choosing the surface color

| Alternative | Reason to consider it | Tradeoff to close |
|---|---|---|
| Stainless steel | The selected visible metal and corrosion strategy suit the exposure and maintenance brief. | Exact grade, product form, finish, joints, contamination control and cleaning access. |
| Aluminum alloy | The selected section and fabricated system meet the architectural and assembly brief. | Alloy/temper, actual section, connections, finish and compatibility of contacting materials. |
| Carbon steel with a defined coating | The required form and fabrication suit a protected painted, powder-coated or galvanized system. | Base-metal preparation, coating sequence, exposed edges/welds, repair and care. |
| Mixed-metal assembly | Different parts may serve different structural, machining or appearance roles. | Identify each part and the approved contact/isolation and drainage detail. |

Do not compare stainless steel, aluminum and painted steel only by color. The quotation needs the actual material specification and fabrication details as well as the visible finish. A finish sample can settle sheen or texture while leaving grade and connection capacity unresolved.

### Resolve a substitution

If an offer changes the specified base metal while keeping the same black finish, treat it as a material/system substitution. Renew the exposure, connection, coating and maintenance review before comparing the revised price.

# Exposure, drainage and cleaning change stainless-steel selection

BSSA’s UK-oriented guidance distinguishes marine, industrial and other environments and their local microclimates. It considers grade together with finish, fabrication, moisture traps and cleaning access. Its comparison of common 304 and 316 grades is not a global promise that 316 is immune to corrosion. [T05]

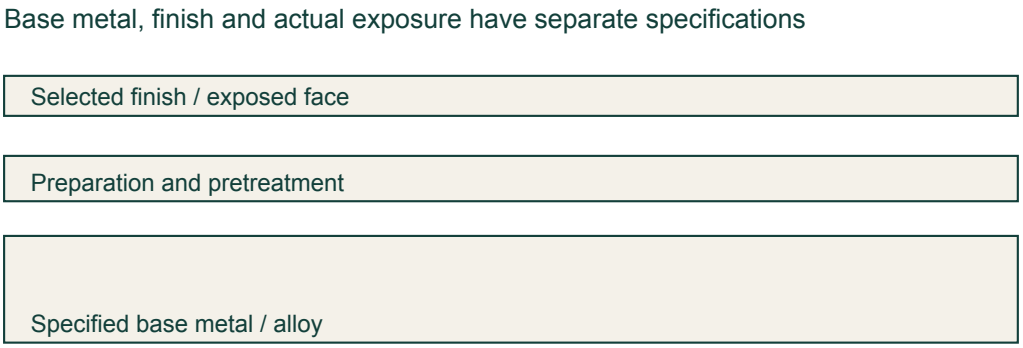
| Actual condition | Purchasing consequence |
|---|---|
| Salt or industrial deposits | Describe the actual source and exposure; obtain a material/finish recommendation for that condition. |
| Sheltered exterior surface | Include deposits and cleaning access; being under a roof does not prove a benign environment. |
| Mixed-metal connection | Define contacting materials and the selected isolation/drainage detail rather than substituting fasteners casually. |
| Welded or fabricated part | Specify the final exposed finish and condition after fabrication, not only the incoming sheet/tube appearance. |
| Hard-to-reach assembly | Resolve the maintenance method before choosing a finish that assumes access. |

The same BSSA guidance warns against iron contamination and identifies crevices and trapped moisture as corrosion concerns. Store and handle the finished parts under the selected fabrication/protection requirements. [T05]

### Resolved choice

Where the initial grade/finish combination lacks support for the actual exposure, obtain a documented alternative or revise the design/maintenance plan. Increasing the grade name alone does not close every joint or cleaning problem.

# A coating system includes preparation, not only its final color




Base metal, preparation/pretreatment and selected finish are separate specification layers. This is a procurement relationship, not a coating recipe or measured section.

The American Galvanizers Association describes a duplex system as paint or powder coating over hot-dip galvanized steel. Its January 2026 overview distinguishes preparation for paint from preparation for powder coating and identifies surface preparation as central to adhesion. The underlying ASTM texts were not read here. [T06]

| Release item | Decision |
| --- | --- |
| Base metal and fabricated part | Material, section and which operations occur before or after the protective system. |
| Preparation and finish system | Named preparation/pretreatment and coating route, specification references and applicable evidence. |
| Visible sample | Color, sheen, texture, grain direction and appearance of corners, welds and repairs. |
| Edges and site work | Actual permitted repair/touch-up method and responsibility for transport or installation damage. |

## Resolve the comparison

An offer for powder coating on bare steel is not the same scope as a defined duplex system. Align the preparation and coating scope before treating identical color samples as equivalent. No service-life multiplier or maintenance-free term is assigned to either offer.

# Approve a representative sample and protect it through construction

| Sample or record | What it can resolve |
| --- | --- |
| Flat sample | Color, texture, sheen and approved reference under agreed viewing conditions. |
| Fabricated corner / weld sample | Appearance after the actual joining and finishing sequence. |
| Glass and metal together | Tint, reflection, frit/coating orientation and adjacency of the selected materials. |
| Care/protection document | Compatible handling, construction protection, cleaning and access for the actual finish. |

Interpon Guidance Note 6, Issue 3 of September 2022, ties care to coating and environment and calls for individual advice for unusual or marine conditions. It also addresses construction contamination and protective materials. Those named instructions do not create a NOVARMIA finish warranty or a universal cleaning interval. [T10]

## Resolve a finish mismatch

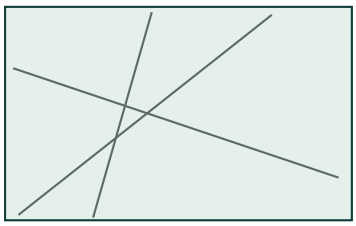
If the approved flat swatch matches but the finished weld area does not, review the fabricated sample and specification. Neither a camera image nor the correct color code settles every appearance variation. Record the agreed condition before repeating the full production batch.

### Preserve the reference

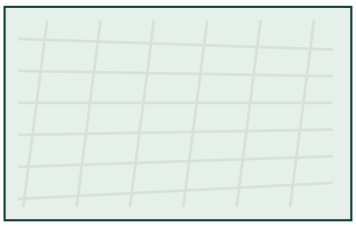
Keep the sample ID, finish system and current assembly revision together. A later coating, supplier or process change needs review against the accepted reference.

# Choose the glass for impact and breakage behavior

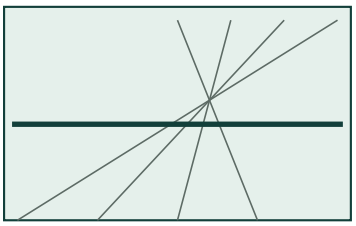
Annealed: larger shards



Tempered: fragments



Laminated: interlayer



Schematic breakage behavior does not prove residual capacity or a complete guard

Schematic breakage comparison only. Tempered fragmentation can reduce cutting risk but may leave an opening; laminated fragments may adhere to an interlayer. No residual guard capacity or retention duration is established.

| Construction | Decision |
|---|---|
| Annealed | Identify its actual use; ordinary annealed construction is not evidence of required impact-safety classification. |
| Tempered / toughened | Identify treatment and applicable evidence; smaller fragments do not guarantee retention in an opening. |
| Laminated | Identify each ply, treatment and interlayer; fragment adhesion does not by itself prove the complete post-breakage design. |
| Tempered laminated | Both terms can describe the same panel: tempered plies bonded with an interlayer. Review the actual combined construction. |

Pilkington’s UK toughened-glass page distinguishes its thermally treated product from annealed glass and requires processing before toughening. Its Optilam page describes bonded plies and fragment adhesion. These explain construction; their UK declarations are not certificates for an unrelated panel. [T03] [T04]

# Human-impact safety and retained protection answer different questions

Guardian explains that broken tempered fragments may fall from the frame, while laminated fragments typically adhere to the interlayer. That distinction matters where a remaining opening could expose a drop. It does not guarantee a damaged panel’s capacity or continued service. [T11]

| Question | Evidence needed |
| --- | --- |
| Human impact | The applicable classification/test and exact tested construction/identification. |
| Normal service | Project loads, glass geometry and support/connection design. |
| After breakage | The required retention/residual behavior of the defined panel and complete system. |
| Fire / security / acoustic duty | The separate required performance and matching assembly evidence. |

## Resolved selection

For a guard where the project requires retained protection after breakage, a monolithic tempered-panel offer supported only by an impact-safety statement leaves the retention requirement unresolved. Select a documented suitable assembly or hold that offer. The word laminated alone is also insufficient without the specified construction and system review.

### Do not convert test families

A human-body impact result, projectile-impact result, fire rating and structural guard evaluation concern different risks and configurations. Keep their requirements and reports separate.

# Read the direct scope of the U.S. glazing rule

16 CFR Part 1201 directly covers glazing in specified doors, bathtub/shower doors and enclosures, and patio-type sliding doors. Its purpose concerns injury from human contact. Section 1201.3 excludes products not listed in its direct scope; section 1201.4 references ANSI Z97.1-2015 procedures, with stated exceptions. This volume read the public rule, not the complete incorporated ANSI standard. [T01]

| Record | Why it matters |
| --- | --- |
| Destination and application | Determine the actually applicable regulation, adopted building rules and project specification. |
| Construction and identity | Connect the evidence to the actual material, treatment, plies/interlayer and fabrication source. |
| Test and marking | Keep the applicable classification, report/certificate and required identification traceable. |
| Assembly design | Resolve supports, geometry, connections and use conditions beyond material impact evidence. |

Direct federal product scope and adoption of a test criterion are different. A project code or evaluated guard system may call for CPSC/ANSI impact criteria even though a guard is not a directly listed product in section 1201.1. That does not turn the material test into a complete guard evaluation. [T01] [T08]

# Match SGCC identity and system reports to what is being supplied

SGCC's public program requires prototype evidence, authorization to label and continuing checks. Its logo/number applies to products fabricated like the certified prototype, and thickness/fabrication scope matters. A passing report and a current certification entry are related records with different roles. No SGCC status is asserted for NOVARMIA or a photographed group panel. [T07]

| Evidence level | Purchasing use |
|---|---|
| Material document | Identifies the actual metal or glass construction and source. |
| Glass test / certification | Matches a specific product/fabrication scope and applicable classification. |
| System evaluation | Covers the named combination and its conditions, not every visually similar component. |
| Project review | Confirms the selected configuration and supporting site conditions for this project. |

ICC-ES ESR-3842 (March 2026; renewal March 2027) evaluates a named CRL laminated-tempered guard under listed codes. Its glass, interlayer, shoe, rail, anchor and installation conditions do not cover a visually similar GEORGE assembly. [T08]

### Resolve a report mismatch

If the offer changes a listed shoe, interlayer, mounting condition or substrate, do not carry the old report forward as automatic evidence. Obtain the configuration-specific review or a supported alternative.

# A guard-mounted rail must also satisfy its handrail duty

The U.S. Access Board stair guide applies to stairs on required means of egress, subject to its stated exceptions and alteration provisions. It addresses graspable geometry, clearance, continuity and returns. A rail may relate to a guard, but those handrail requirements still need their own review. These are bounded U.S. access requirements, not universal guard heights or loads. [T02]

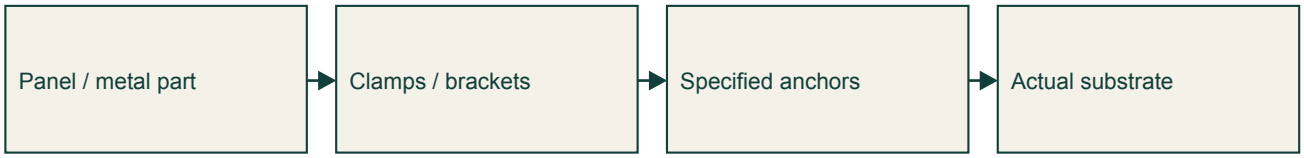
| Component | Separate review |
| --- | --- |
| Glass guard / balustrade | Fall-protection geometry, panel/support behavior, loads and building attachment. |
| Top cap / rail | Its actual support/end condition and role within the selected assembly. |
| Gripping handrail | Applicable graspability, clearance, continuity, extensions and returns. |
| Bracket or fixing | Actual connection and supporting material behind the visible finish. |

### Resolve the combined detail

If the selected cap rail cannot satisfy the applicable gripping requirement, add or select a properly coordinated handrail detail. Do not call the cap a handrail solely to avoid the additional component.

# Follow the connection path into the actual building structure

A material certificate cannot replace the designed connection path




Geometry, load, edge conditions and site installation remain linked

Panel or metal part → selected clamps/brackets → specified anchors → actual supporting substrate. A material certificate cannot substitute for this complete connection path.

| Interface | Design input to close |
|---|---|
| Glass / hardware | Construction and thickness range, edge/hole/notch geometry, gaskets, contact and support. |
| Hardware / anchor | Selected part, base plate or shoe, fasteners, geometry and actual mounting condition. |
| Anchor / substrate | Actual substrate, thickness, edge/spacing conditions and supporting-structure design. |
| Finish / water management | Penetrations, drainage, sealants and compatibility with the selected finished detail. |

The CRL evaluation requires project-specific supporting-structure design and defined installation conditions. Its tables do not provide generic anchor or substrate defaults. [T08]

### Resolve the site conflict

When the actual support differs from the released detail, stop that connection’s release and obtain the revised design. A longer screw or more sealant is not a documented substitute for knowing the supporting construction.

# Freeze holes, notches, edgework and hardware before tempering

| Fabrication record | What must agree |
| --- | --- |
| Panel identity | Assembly/revision, glass construction, face/orientation and actual fabrication dimensions. |
| Edges and corners | Required finish and actual geometry, including any exposed or supported edges. |
| Holes and notches | Current hardware template, datum, handing and fabricator’s accepted drawing. |
| Coatings / interlayer | Actual surfaces, orientation, edge compatibility and selected system conditions. |
| Hardware / seals | The exact mating parts and current dimensional documents. |

Pilkington requires cutting, drilling and edgework before toughening for its named product. Obtain the glass fabricator’s released drawing rather than promising that a completed tempered panel can be resized or drilled on site. [T03]

## Resolve the changed hinge

If a late hinge substitution changes the glass cutout, first establish whether the old and new templates are truly compatible. If not, revise the panel fabrication and associated order. Similar external hinge dimensions do not prove identical glass preparation.

### Inspection before installation

Identify and record actual edge damage or fabrication discrepancies. Physical receipt and a quantity total cannot waive the selected glass/hardware installation requirements.

# A shower enclosure needs its exact opening and sealing detail

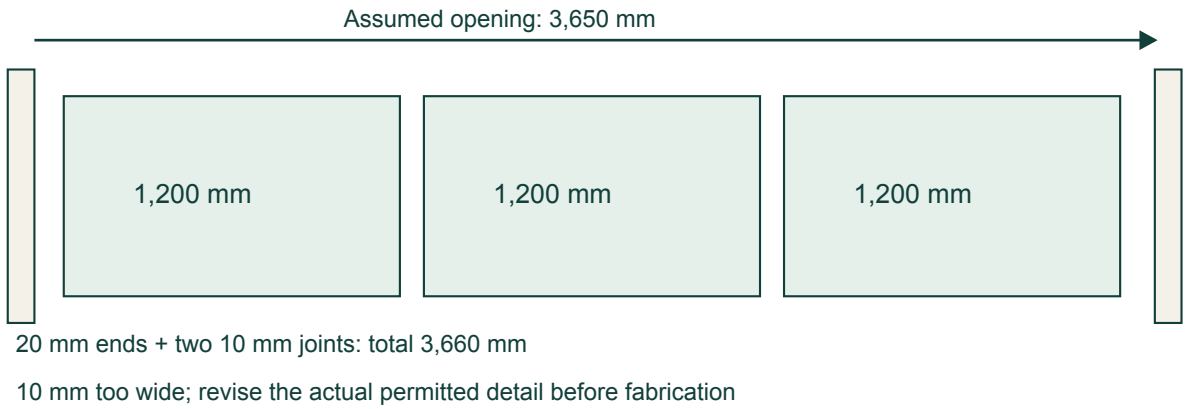
Kohler pivot-door guide 1348022-2-D names K-27602 and K-27614, requires the base and finished walls before installation, distinguishes left/right pivot configuration and directs the stated sealing locations. It warns that extra sealing in other locations can cause leakage. These are named-product instructions; their dimensions and attachment details are not assigned to group products. [T09]

| Interface | Resolved purchasing response |
|---|---|
| Finished opening | Record the actual finished surfaces, measured geometry and selected model/detail. |
| Operation | Confirm handing, swing, handles and adjacent-fixture conflicts. |
| Support | Match the specified attachment surfaces and actual construction. |
| Water management | Use the selected enclosure/base/wall sealing and drainage detail. |
| Maintenance | Retain access, replacement parts and the selected inspection/care instructions. |

### Choose the actual assembly

A loose glass panel and clamp offer is not equivalent to a complete enclosure with its matched hardware, seals and installation detail. More silicone is not an automatic improvement.

# Resolve the assumed panel-width conflict before fabrication




Assumed teaching conflict: a 3,650 mm opening versus three 1,200 mm panels, two 20 mm end allowances and two 10 mm joints. The total is 3,660 mm, which is 10 mm too wide.

| Assumed input / calculation | Result |
|---|---|
| Three fabrication widths | 3 × 1,200 = 3,600 mm |
| Two end allowances and two joints | 20 + 20 + 10 + 10 = 60 mm |
| Occupied width | 3,600 + 60 = 3,660 mm |
| Measured opening minus occupied width | 3,650 − 3,660 = − 10 mm |

All values are teaching assumptions, not a permitted guard or glazing detail. The initial combination conflicts and must not be released unchanged. If a revised selected detail expressly permits two 5 mm joints with the same end allowances, the total becomes 3,600 + 40 + 10 = 3,650 mm. That closes this arithmetic balance only; tolerances, movement, supports and the actual permissible joints still need their referenced review.

### Keep the two dimension sets distinct

The workbook accepts entered fabrication rectangles. It does not derive glass sizes from an opening or choose installation gaps. A field dimension is not automatically a fabrication dimension.

# Count fabrication rectangles without disguising them as glass yield

Assume three identical rectangular fabrication panels, each 1,200 × 2,400 mm. Gross rectangle area each = 1,200 × 2,400 ÷ 1,000,000 = 2.88 m². Gross total = 3 × 2.88 = 8.64 m². Enter the actual accepted fabrication dimensions, not the measured opening.

| Quantity | What it means |
|---|---|
| 2.88 m² each | Gross rectangular envelope of one entered panel. |
| 8.64 m² total | Three entered rectangles; no holes/notches deducted. |
| Three panels | Physical fabricated-piece count, separate from area. |
| Actual glass order | Still needs construction, shape/cutout record, labels and individual identity. |

If an opening/interface revision changes a panel width, renew the quantity input. A nonrectangular panel can have a bounding rectangle, but that area does not describe its actual outline, cutting loss, fabrication effort or chargeable commercial basis.

### Calculator boundary

This is gross rectangle arithmetic. It provides no stock-sheet nesting, optimal yield, weight, breakage allowance, stress, impact or guard-capacity calculation.

# Keep cut-member lengths separate from stock and hardware counts

| Assumed cut-list line | Arithmetic | Physical quantity |
|---|---|---|
| Member A: 2,400 mm finished length | 2,400 × 2 ÷ 1,000 = 4.8 m | 2 Each |
| Member B: 1,200 mm finished length | 1,200 × 2 ÷ 1,000 = 2.4 m | 2 Each |
| If A and B are different profiles/finishes | Do not combine them into one undifferentiated order. | Separate identified lines |

Total length describes those entered finished pieces. It does not establish the stock length, kerf, miter allowance, end trim, joining sequence or number of commercial stock bars. The actual cut list and supplier basis must settle those questions.

## Resolve a kit count

Assume an actual selected detail calls for two matching hardware sets per panel: three panels need 3 × 2 = 6 sets. That is an explicit teaching requirement, not a universal clamp number or support design. Order and receive a defined complete set as Each, or list its individual components separately; do not count a half-filled bag as a complete set. Keep hardware-set demand in the actual bill of materials/order: the companion workbook’s linked quantity and receipt registers cover panels and straight members.

### Length is not a receipt unit

The workbook receives the identified panel or member in Each. A 4.8 m calculated total does not become 4.8 physical pieces or an automatic stock-bar order.

# Compare the complete metal-and-glass package

| Quotation line | Common scope to align |
| --- | --- |
| Metalwork | Material, sections, fabricated members, joints, finish/preparation, sample and quantity basis. |
| Glass | Actual construction, treatments, geometry, edgework, holes/notches, orientation and evidence. |
| Hardware and connection | Exact parts, gaskets/seals, rails/shoes, anchors and supporting-detail responsibilities. |
| Design and installation | Measurements, fabrication documents, engineering scope, actual site preparation and installation. |
| Packing and acceptance | Piece/assembly labels, protection, transport/access, inspection and remedies. |

A square-meter glass offer is not a complete guarded balcony price. A linear-meter rail offer may exclude end returns, brackets, corners, anchors or finish work. Align the defined scope and commercial unit before comparing totals. This guide supplies no invented price, savings, lead time or standard package.

## Release the current chain

Match the assembly revision, accepted sample, glass/hardware fabrication drawing, connection/substrate detail and required evidence. Record unresolved items as a hold; do not convert a sales acknowledgment into an engineering or site approval.

# Count actual accepted pieces and retain the condition record

| Separate teaching order | Events | Result |
|---|---|---|
| Three panels | 3 received, 2 accepted; one is held for documented damage. | 3 received; 2 accepted; 1 acceptable panel outstanding. |
| Two members A | 2 received and accepted. | 2 received; 2 accepted; none outstanding. |
| Two members B | 1 received and accepted. | 1 received; 1 accepted; 1 outstanding. |

If one acceptable replacement panel later arrives, panel receipts total 4 while acceptable panels total 3. The extra arrival does not erase the earlier damage. Receive the remaining B member on its own identified line. Do not add square meters or calculated meters to the Each counts.

Record actual marks, breakage, edge damage, wrong fabrication or coating damage with the inspection reference and disposition. Interpon’s named guidance also shows why protection and construction contamination need their own care decisions; it is not a blanket approval of wrapping materials. [T10]

### Receipt is not service approval

An accepted count cannot approve the finished guard, anchors, handrail, shower operation or installation. Retain those actual project checks and provide the selected care/maintenance documents.

# Assembly Schedule: retain the current material and interface chain

The companion XLSX has three worksheets and six work areas, with 50 records per work area. It records current assemblies and reviews, calculates entered fabrication-rectangle areas and finished-member lengths, and reconciles physical Each receipts.

| Worksheet / header row | Actual function |
| --- | --- |
| Assembly Schedule / 7 | Assembly ID, location, application, drawing revision, frame material/finish, glass construction, connection/anchor detail, design requirement and sample/evidence references. |
| Assembly Schedule / 67 | Unique review ID, assembly/revision, selected review scope, human decision, reviewer/date and record reference. |

The application label does not prove suitability. Recorded and Hold record human review decisions; they do not certify the material, interpret a test, or validate a connection. Use the references to retrieve the actual current documents.

### Revision changes need actual review

A changed glass build-up, finish, hardware or substrate can invalidate the earlier pairing. Update the affected drawings, quantities, evidence and commercial decision; keep superseded documents identifiable.

# Panel & Member Quantities: entered dimensions, two quantity families

| Work area / header row | Actual function |
| --- | --- |
| Panel & Member Quantities / 7 | Panel ID, assembly/current revision, mm/in fabrication length and width, physical quantity and shape/cutout reference; gross area each/total in m². |
| Panel & Member Quantities / 67 | Member ID, assembly/current revision, description, finished cut length, mm/m/in/ft unit, physical quantity and drawing/cut-list reference; total length in m. |

Reproduce the assumed panel case: 1,200 × 2,400 mm and Physical quantity 3 gives 2.88 m² each and 8.64 m² total. Separately enter member A at 2,400 mm with quantity 2 for 4.8 m, and member B at 1,200 mm with quantity 2 for 2.4 m.

These are entered fabrication quantities. Opening allowances, glass thickness, holes/notches, profile selection, stock cutting and structural behavior remain in the referenced actual drawings and reviews.

### No automatic layout

The worksheet does not subtract joints from openings, generate cutouts, count anchors, select hardware, optimize nesting or turn the length into stock bars.

# Receipt: identify the panel or member being received

| Work area / header row | Actual function |
| --- | --- |
| Receipt / 7 | Unique order-line ID, assembly/current revision, exact Panel / Member ID, Purchase order reference, ordered Each count and final-delivery declaration; linked physical totals. |
| Receipt / 67 | Unique event ID, order-line/current revision, arrival date, received/accepted counts, damage/exclusion or None, inspection reference and reviewer/date. |

Use the three-panel, two-A-member and two-B-member teaching lines separately. The referenced item identity prevents an area total from being mistaken for a physical order count. Append real arrivals once; retain the original condition records when a replacement arrives.

A final-delivery declaration cannot make a damaged item acceptable. The file is not a full return, refund or installation-sign-off system. Link those actual records separately.

### Capacity and operating boundary

Each work area has 50 input rows. Extensions require formula/validation/link review. There is no automatic supplier, CAD, PO or website synchronization. Native Microsoft Excel has not been tested for this release; available-engine checks are recorded separately.

# Working glossary

| Term | Meaning in this volume |
| --- | --- |
| Grade / alloy / temper | Material identity and condition, separate from visible color or sheen. |
| Preparation / finish | The specified underlying process and exposed surface system. |
| Annealed / tempered / laminated | Glass treatment or construction terms; laminated can use heat-treated plies. |
| Human-impact evidence | A matched material/classification record, not a complete guard design. |
| Guard / handrail | Fall-protection assembly / gripping support with its applicable requirements. |
| Glass retention / residual behavior | What the selected construction/system must do after breakage; not proved by the word laminated alone. |
| Opening / fabrication dimension | Site geometry / the size actually released for manufacture. |
| Panel area / member length / Each | Gross rectangle measure / total entered finished length / physical piece or defined-set count. |

# Sources and scope notes

## [G01] George Stair & Flooring - Railing Collections

https://georgerailfloor.com/railing/

Metal, aluminum-alloy, cable, glass and acrylic railing sourcing routes. Broad harmless-breakage, code, installation, corrosion and performance claims not adopted as specifications.

## [G02] George Stair & Flooring - Fittings of Stair and Railing

https://georgerailfloor.com/handrail-fitting/

Published accessory types and sourcing scope. No exact part certification, grade, capacity or pool-barrier approval established.

## [G03] GEORGE Group public project record - Lebanon Private Villa Full-House Building Materials Supply Case

https://georgeconstuctiongroup.com/lebanon-private-villa-full-house-building-materials-supply-case/

Attributed installation/fit-out balcony image; visible glass railing and adjacent opening. Archived context retained explicitly. No completed handover, glass construction, load test, anchor or NOVARMIA delivery claim.

## [T01] CPSC / eCFR - 16 CFR Part 1201: Safety Standard for Architectural Glazing Materials

https://www.ecfr.gov/current/title-16/chapter-II/subchapter-B/part-1201

Direct U.S. product scope, impact/environmental requirements and incorporated procedure reference. Authoritative but unofficial electronic rule; complete ANSI Z97.1-2015 text not read. Not a complete guard design standard.

## [T02] U.S. Access Board - Chapter 5: Stairways

https://www.access-board.gov/ada/guides/chapter-5-stairways/

U.S. ADA required-egress stair/handrail scope and stated exceptions. No universal height/load rule, complete guard/structure or worldwide compliance asserted.

## [T03] Pilkington UK - Pilkington Toughened Glass

https://www.pilkington.com/en-GB/united-kingdom/architectural-and-technical-glass/product-categories/safety-and-security/pilkington-toughened-glass

Named thermally toughened construction, breakage and fabrication sequencing. UK product example; no unrelated product certification or numeric strength/capacity transferred.

## [T04] Pilkington UK - Pilkington Optilam

https://www.pilkington.com/en-GB/united-kingdom/architectural-and-technical-glass/product-categories/safety-and-security/pilkington-optilam

Bonded plies/interlayer and qualified safety use. No universal residual load, retention duration, interlayer choice or guard approval supplied.

## [T05] British Stainless Steel Association - Selection of Stainless Steels for Building External Applications

https://bssa.org.uk/bssa_articles/selection-of-stainless-steels-for-building-external-applications/

Material selection depends on exposure and actual detail/maintenance. UK-oriented general guidance; no universal 316 marine suitability, numeric finish, corrosion life or connection design adopted.

## [T06] American Galvanizers Association - Specifying Duplex Systems

https://galvanizeit.org/specification-and-inspection/specifying-duplex-systems

Paint/powder over galvanizing and distinct preparation routes. Overview read, not full ASTM texts; no lifetime, savings or maintenance-free multiplier transferred.

## [T07] Safety Glazing Certification Council - Get SGCC Certified

https://sgcc.org/get-certified

Safety-glazing certification scope and product identity. No actual GEORGE/NOVARMIA certification or complete railing evaluation established.

## [T08] ICC Evaluation Service; CRL-hosted copy - ICC-ES Evaluation Report ESR-3842

https://azure.crlaurence.com/datasheets/pdfs/ESR-3842.pdf

Named CRL GRS laminated-tempered guard system; configuration and project design conditions. Relevant sections read, not every table. No glass/anchor/load dimensions adopted; no approval transferred to similar parts or other manufacturers.

## [T09] Kohler - Pivot Shower Door Installation Instructions 1348022-2-D

https://resources.kohler.com/webassets/kpna/catalog/pdf/en/1348022_2.pdf

Finished-wall/base, pivot configuration, damage handling and selected sealing locations. Named guide only; not full manual read. No dimensional range, attachment default or universal sealing method transferred.

## [T10] AkzoNobel Interpon - Guidance Note 6: Cleaning and Maintenance of Powder Coated Architectural Components

https://powdercoatings.brand.akzonobel.com/m/3ff4ff8c9f64cbc7/original/Interpon-Guidance-Note-6-Cleaning-and-Maintenance-EN.pdf

Named coating/environment care, construction protection and contamination. No universal interval, tape duration, chemical recipe or NOVARMIA warranty created.

## [T11] Guardian Glass, U.S. and Canada - Safety Glass

https://www.guardianglass.com/us/en/why-glass/build-with-glass/glass-functions/safety-glass

Fragmentation/fallout versus typical interlayer adhesion. No guaranteed residual protection, glass build-up, minimum thickness or complete system approval inferred.

# Photo credits and illustration scope

Cover: balcony glass railing and dark-framed opening from GEORGE’s Lebanon villa public record. The archived project body attributes the image set to installation/finishing feedback. The original local asset was viewed and copied unchanged; current page retrieval was unavailable during this volume. [G03]

The photograph does not identify the panel construction, finish, fixings or required performance, and it is not a laboratory result or final completion record. NOVARMIA presents the attributed group record rather than claiming a new completed project.

Five original diagrams explain assembly/connection relationships, metal-finish layers, breakage behavior and an assumed panel-width conflict. They are conceptual procurement illustrations, not approved shop drawings, measured specimens or structural calculations.